

## Making It Happen — Insights from the Biotech Academy

*Excerpted from interviews with Marilyn Bliss, Medical Magnet Coordinator, Andrew P. Hill High School; Mary Metz, Biotech Academy Director and English Teacher; Larrie Peters, Counselor; Doug Schafer, History Teacher; and Homero Rey, Mentor, Applied Biosystems.*

### HOW DID THE BIOTECHNOLOGY ACADEMY COME ABOUT? WHAT IS THE GOAL?

**Marilyn:** The inspiration for the Biotechnology Academy came along because we had a biotechnology class here at Andrew Hill [High School] and I attended a meeting regarding a California Partnership grant. These are very special grants from the State of California, provided that you have all of the classes in place for students. And that would be English, math, science, and the vocational class. What we did is work the vocational class through science. I wrote a planning grant and we were able to receive it through the California Partnership Academies five years ago. The idea behind it was to create a career path for the biotechnology or medical technology fields because this is an area that is in need of labor. Not only do they need biotechnologists, but they also need lab assistants, phlebotomists, all kinds of different people to work in the lab—pathologists, clinical lab technicians, those are all the different careers that are in need in the next five to 10 years. I worked extensively with the science teachers and with Mary Metz, in the English department, in order to put the grant together.

### HOW ARE ACADEMIES DIFFERENT FROM TRADITIONAL HIGH SCHOOLS?

**Mary:** Andrew Hill [High School] has 1,900 students. The Academy program creates a [smaller] 'school-within-a-school.' Surely, if I have 150 English students, I can't know all of them very well, and I don't know them very well unless I am sitting with their teachers and I am conversing about what is going on and what they are doing in their classes. Our program is also very different because [students] are finding relevance. Why is English important? Why is math important? Why should I take science? They are seeing it by going into the Biotech industry. They are seeing it by seeing guest speakers come to talk to them about why they need English, math, and science in their careers. They are seeing it by working in teams together. They are working in teams much as we do in the outside world. We don't work all by ourselves out there. So they are seeing the goal and they see that they can do it. They have a lot of support to do it. There's a tutoring program, there is a mentoring program in their Junior year, they are getting a lot of attention. And I think that attention really creates that motivation for them.

If we can create smaller schools for our students, wouldn't we have more students who are succeeding? That makes a lot more sense than having these huge high schools

where no one knows anyone, you can't get guidance, you don't know where to go to for help. 'How do I apply for college? Where do I fill out my form?' At Biotech, we become counselors, teachers, guidance people, all in one. Students in the United States are not doing well in science and math and so we really focus on science and math. We take at-risk youth and put them in a spot where they could take these higher level courses without being intimidated by the other people in the classroom, by their peers, especially.

### HOW ARE STUDENTS SELECTED FOR THE BIOTECHNOLOGY ACADEMY?

**Marilyn and Mary:** All 500 freshman at Andrew P. Hill High School hear a presentation about the academy. Those who are interested in joining the academy go through an interview process. We consider such things as attendance, GPA, socioeconomic level, counseling, optimism, and enthusiasm. Students need to be able to read at the 8th-grade level, but their motivation to learn is key. Our criteria isn't just to accept "C" students and above. We are looking for that "D" and "F" student who is capable of being able to do the work but who is, for some reason, not doing it, either out of sheer laziness, out of, for whatever reason, something else is going on at home. Being in an academy really helps these kinds of kids.

At the end of sophomore year, the student makes a decision about whether he or she will continue in the academy. Can they do well in chemistry? Are they willing to work as a part of the team?

### HOW IS TEACHING AT THE BIOTECHNOLOGY ACADEMY DIFFERENT?

**Mary:** The teachers who are working in our program have been in it since year one. When we started four years ago, we asked everybody in school 'who would like to be a part of this?' We told them it would be a lot of extra work, that they might not get paid for this extra work, but that it would be an attempt, an opportunity to really make teaching count—that would be the payoff in the end. So, you got the teachers that were really interested in that goal. They were already doing it in their classrooms by themselves. They were already great teachers to begin with. And so now, working as a collaborative group on interdisciplinary projects, they have become even better at what they do.

Interdisciplinary curricula. For example, we have 400 laptops that are available in the classroom. In my classroom, while we were reading *Hotzone* by Richard Preston, I also had them look up infectious diseases on the Internet on their laptops so that they were immediately able to connect the Ebola virus in *Hotzone* to other infectious diseases. They were able to go to the Center for Disease Control site and find out what was going on there; and the World Health Organization.

**Marilyn:** The teachers are dedicated and they have to be dedicated in order to make it work because the students need an extra push, or extra care, and some kind of structure. And that's what the Biotechnology Academy has provided. If the grade checks are not okay, they must go to different teachers in order to raise their grades. So it's with all of that, and the parent contact, of course, is very important. And then the mentor contact again—they are the ones who help the students see the path that they need to be leading in order to graduate from high school and go on.

The teachers put in all kinds of extra time at lunch, after school, before school, and sometimes on the weekends as well. So I think it takes a lot of planning and we call it 'chasing the kids.' And the reason why we do [it] is because, you've just got to make sure that the kids are on task. And sometimes, because of their family situations, or circumstances beyond the school, they can't always focus on the things that they need to be able to focus on. So again, we just kind of pull them back in—[tell them] 'we've got to get this done in a certain amount of time, this is your timeline.' And usually the kids respond to it very well because the teachers are very caring.

**Doug:** We've got four teachers, at least four teachers watching over a small group and we can communicate, watch their attendance, call home, stay on top of the kids. And year to year you follow them. They are with the same group of teachers for three years: sophomore, junior, and senior year. In a sense it's a family. And I think all of our students actually need, when they come on to this campus, need some kind of family that keeps them on track, who watches over their progress. And Biotech is just one of those little families we have at our school that is able to watch over them.

### **WHAT DOES THE DESIGN OF THE BIOTECH ACADEMY OFFER STUDENTS WHO FACE ACADEMIC AND/OR PERSONAL CHALLENGES?**

**Marilyn:** Our school has many underrepresented minorities. It's very important for us to provide a pathway for students so that they can see what they can do with their lives beyond a minimum wage job or beyond just getting a job.

**Mary:** [Students] know that they can't go from one class to another without teachers knowing what exactly is going on. If I know that Keith, for example, doesn't have his essay in his English class, Ms. Sutherland is going to know it in biology, and so will Ms. Griffin in world history. That's a real difference [from most schools] because we tell the student 'hey, you still owe that essay to Ms. Metz in her English class.' We are constantly reminding, we are constantly hounding, we are constantly nagging. I mean we nag them to death but despite all the nagging, that's what they really want! They want an authority figure, they want someone to tell them 'what do I need to do to be successful?' No one is doing that in traditional schools. They just say, 'okay, you have to take three years of English and two years of science. Do it.' That's all the guidance you get.

I know that in the Latino community and in the Asian community there is a great respect for teachers and adult figures. But you need to have those adult figures actually come right at you and say something to you. So you have to be a strong person to begin with. If you look at the teachers in our program, we are all very strong, up-in-your-face teachers. We are not the kind of teachers that sit back and allow the class to just develop in its own way.

**Larrie:** We try to identify Biotech students early on in their high school career. We start with students who are coming from the eighth grade into the ninth grade as freshmen. Usually these students have had problems in school, either attendance or grades. However, they have the potential to do well. Those are the students we like to target because they are the ones who need extra support and they fit the profile of the Academy. We work with them in summer school, and we introduce them to different teachers, we get them familiar with what happens in high school, what consequences they would suffer if they were to break rules, who they need to go to if they are in trouble, or if they have a problem. Also, we try to get in touch with their parents and let their parents know that so-and-so is another person whom they can contact if they need something. So, we try and establish a base right there in summer school. When those students are sophomores, we start recruiting them for Biotech. They are very, very, very, much at-risk. For some reason the sophomore year is exactly that—I mean, it's sophomoric. We never know what's going to happen. They seem to crash. And so that's the year they need the most support. And that is really the year that I feel—at least for me—this last year, I have spent a lot of time with the sophomore class, working with the kids, working with teachers, and working with the parents, and calling parents. And counseling kids and having meetings with kids, and as much time as we spend with the sophomores, I really truly believe that the payoff comes when they become seniors because it seems that they start to feel comfortable and trust us. And they feel that that support is there. And as long as they know that support is there, at school, then they usually come around.

## WHO ARE YOUR COMMUNITY PARTNERS AND WHAT DO THEY DO?

**Marilyn:** Business partners provide mentors for our students and work with the students regarding projects. They can also help them regarding their college education—help them get a focus; show them a career ladder. As high school students graduating from Andrew Hill, they would have some skills in biotechnology and then they could use those skills to get a job. The biotechnology companies, of course, really want our students to go on and get higher education.

We work with colleges and universities. There's a nine-month program at Foothill [College]. We encourage our students to go there and to get that certificate and then to go to work also. Other programs that are coming are a two-year certificate at a junior college level, as well as a four-year degree in many different fields. We are also working with Santa Clara University and San Jose State University. Each institution offers biotech programs and/or technical preparation programs. We would like our students to follow that career path and to graduate from high school, and then to be motivated to go into this career field.

**Mary:** Juniors are matched up with someone in the biotech industry—from Stanford University, from Kaiser, or from the medical field, as long as it kind of has to do with genetics. The benefit from the mentor program is, at the end of the year, the students finally say 'I have been meeting with this person from the biotech industry throughout my entire junior year. Now I've seen what is required in the workplace, what I need to do to really succeed in my life.' Just to say 'oh, we work in teams,' doesn't mean anything unless you actually see it being done. Just to hear a mentor's story, because a lot of the mentors are in it because they also had someone earlier in their lives that made a difference so they want to give that back in return. So, just to have someone else on the outside who is interested, as well, is just one more person that makes that difference for them.

**Homero:** I am a product test scientist at Applied Biosystems. Mary Metz came by and gave us a presentation on the Biotech Academy mentorship program and let us know that she really needed people who were in the biotechnology industry to come and talk to students, be a resource, and really help them see what it would take to become a biotech scientist. My background is Latino, and a lot of the students are of Latino background. I think it helps to see someone who comes from their culture; who has been able to progress in this particular career, so it becomes more of an option for them.

I have two students to mentor. I see them about once a month at the high school or at events (field trips) like this. I am there to answer questions and to help them understand what it takes to become a successful scientist—the things they really need to focus on as far as their school work. But, really, I am trying to help them figure out what

they really enjoy doing. And, if it happens to be something that is not in the biotech field, then that's okay, as long as they come to that realization.

There is a lot of knowledge and experience here [at Applied Biosciences] and a lot of it can be really useful for the kids in this program because they are in the formative stages, and exposure to the real world can help them understand the choices that they have. They don't always get that at school, so I think we help foster their creativity and their imagination a little bit by showing them what is out there other than being a doctor or a lawyer or typical careers.

## WHAT ARE SOME OF YOUR MEASURES OF SUCCESS?

**Marilyn:** Ninety-five percent of the Medical Magnet students who graduate go to post-secondary and they do very well. They take at least 12 units or more and they are usually getting C's or better. And I know this from a survey that I do every year—done it for the last five years. Also, 57 percent of our students go into health careers. This year we have 155 seniors that are graduating.

**Mary:** Ninety-five percent of last year's senior class applied for and were accepted to a two- or four-year institution. We helped our students get over \$55,000 in grants and scholarships. We have won one national award from the Employment Management Foundation and were recognized in the March 28, 2002, issue of *The Wall Street Journal*. We recently received the "Lighthouse Award" from the Graduate School of Education at the University of California at Berkeley. At the district level, we have received two awards for leadership and work skills learning. We also continue to receive grants from local biotechnology companies.

## WHAT CAN OTHER SCHOOLS LEARN FROM THE BIOTECHNOLOGY ACADEMY?

**Marilyn:** Other schools can learn from our experience—how we started. We started with a planning grant. We were very systematic concerning beginning the program. And I think that that really helped. And I think that they can learn from our successes as well as the different areas where we haven't had success, but instead we've revamped different things. We have never given up on any particular area. For instance, when we had problems with mentors in our first year, we went back to the drawing board and decided how we would redo it. And I think that's the wonderful thing about the teachers. They refuse to give up on the students and they refuse to give up on the program. Educators can also visit our Academy and talk with staff during a "Lighthouse" tour organized through the Career Academy Support Network ([casn.berkeley.edu](http://casn.berkeley.edu)).